4.18 WATER QUALITY AND SEDIMENTS

This section presents baseline conditions in the proposed Project area and discusses potential impacts and mitigation related to construction and operation of the Project. It also evaluates impacts of alternatives to the Project. Issues raised during public scoping include impacts on water quality from spills; erosion; and discharge of ballast waters, sewage, cleaning and wash-down waters, and other wastes. These concerns are addressed here. This section does not discuss international ramifications of Project activities on water quality and sediments (such as ballast discharge in foreign ports) because any overseas activities would be within the jurisdiction of other countries.

4.18.1 Environmental Setting

This subsection describes the marine water, groundwater, and surface water resources in the Project area. It includes the characteristics of the sediment in the Project area because water quality is affected by sediment chemistry.

4.18.1.1 Marine Water

Water quality of the ocean waters within the Southern California Bight and the Project area, specifically temperature, salinity, dissolved oxygen (DO), pH, transparency, trace metals, and waterborne bacteria, is presented in Table 4.18-1.

4.18.1.2 Sediment Quality and Toxicity

Sediment in the Project vicinity consists of very fine to medium sand (Welday and Wouldiams 1975). Some gravel, muddy sand, and mud are also present. Deeper escarpment and basin sediments consist mainly of very fine silts and clays. The construction of Port Hueneme effectively trapped much of the sediment supply to Ormond Beach. Approximately 1.9 million cubic yards (1.5 million cubic meters [m^3]) is dredged biannually from Port Hueneme and deposited to intertidal and subtidal habitats at Ormond Beach.

Surficial sediment composition and quality in the Project vicinity are influenced by several factors, including tides, currents, wave action, and natural oil and gas seeps. Human influences, including dredging, surface water runoff, industrial and domestic outfalls, oil spills, and discharge from ships, also affect sediment quality.

The California State Water Resources Control Board (SWRCB) has listed several water bodies as impaired due to sediment concentrations and toxicity exceeding regulatory criteria in the Mugu Lagoon and Port Hueneme area, which neighbor the Project area. Additionally, throughout the Southern California Bight, from Point Conception to Huntington Beach, natural discharges of liquid petroleum occur from fissures in the ocean floor. No specific impairments have been listed for the Ormond Beach area. The sediments in the vicinity of the offshore horizontal drill exit points were collected and analyzed for potential contamination, and no contamination was detected.

Table 4.18-1 Major Water Quality Parameters of the Ocean Waters in the Project Vicinity

Temperature	• Surface water temperatures at Port Hueneme (National Ocean Survey 1970, in Entrix 2004) exhibit a cyclical pattern, with the lowest mean temperature (55.8° Fahrenheit [F] [13.22° Celsius (C)]) occurring during February and March and the highest mean temperature (62.2°F [16.78°C]) occurring during August (U.S. Geological Survey [USGS] 1980, in Entrix 2004). Surface water temperature data collected offshore of the Reliant Energy, Inc. (Reliant) Ormond Beach Generating Station are consistent with the Port Hueneme data ([MBC] 1995, in Entrix 2004). • During the warmer months, the temperature difference between water at the surface and water at a depth of 200 feet (60.96 meters[m]) may be 15°F (-9.44°C) to 20°F (-6.67°C); this difference can be as small as 1°F (-17.22°C) to 2°F (-16.67°C) in winter (USGS 1978, in Entrix 2004).
Salinity	• Salinity typically increases as depth increases, with concentrations varying between 33.5 and 33.8 parts per thousand (ppt) in the Southern California Bight (USGS 1978, in Entrix 2004).
Dissolved Oxygen	• DO concentrations over the Southern California coastal shelf range from 6.6 to 11 milligrams per liter (mg/L) (90 to 135 percent of saturation) in surface waters and from 2.5 to 10.3 mg/L at the ocean bottom (Santangelo et al. 1994).
pH	• The pH in southern California coastal waters varies around a mean of approximately 8.1 (MBC 1995).
Surface Light Transmittance	• Visual transparency along the coast of Southern California varies from an average of less than 20 feet to greater than 50 feet, with the lowest values occurring close to the coast and the highest values farther offshore (U.S.Geological Survey 1978).
Trace Metals	• The levels of metals in the waters of the Southern California Bight are within ranges reported for seawater in various areas around the world (SCCWRP 1973).
Waterborne Bacteria	• In 2001, health warnings were posted at Ormond Beach near J Street for 64 days and at the industrial drain for 63 days. The frequency of exceedance for these beaches was high compared to the 10-day average frequency of closure for other beaches in the county.

Source: Entrix 2004b.

A metal-recycling facility owned by Halaco Engineering Co. is located at Ormond Beach. The facility includes a slag (waste) pile and waste ponds that may be contaminating nearby wetlands, groundwater, and the ocean. Halaco announced that it intends to sell its South Oxnard factory and use the proceeds to address problems identified by government regulators and environmental watchdogs (LA Times.com 2004).

4.18.1.3 Groundwater Resources

Shore Crossing and Center Road Pipeline Area

Groundwater elevations range from sea level in the west to approximately 150 feet (45.7 m) above sea level from the shore crossing along the Center Road Pipeline route. The five aquifers in this area contain relatively fresh water, except in areas of saltwater intrusion near the coast. No known groundwater wells used for public, domestic, or agricultural supply are in the immediate Project vicinity. Groundwater in the area is managed for agricultural and municipal services.

Line 225 Pipeline Loop Area

The Santa Clara River Valley East Basin is bordered on the north by the Piru Mountains, on the west by impervious rocks of the Modelo and Saugus Formations and a constriction in the alluvium on the south by the Santa Susana Mountains, and on the south and east by the San Gabriel Mountains. The surface is drained by the Santa Clara River, Bouquet Creek, and Castaic Creek. Groundwater in the subbasin is generally unconfined in the alluvium but may be confined, semi-confined, or unconfined in the Saugus Formation. Groundwater of the East Basin is managed mainly for servicing municipal demands within the Santa Clarita Valley.

4.18.1.4 Surface Water

Center Road Pipeline

Freshwater streams and waterways on the Oxnard Plain include the Santa Clara River, Calleguas Creek, Conejo Creek, the Oxnard Drain, the J Street Drain, and the Beardsley Wash-Revlon Slough Complex. Numerous other agricultural drainages throughout the Oxnard Plain are used to irrigate adjacent crops and to direct water and urban runoff to the Pacific Ocean. In most cases, these artificial waterways are highly disturbed by fluctuating water levels, vegetation maintenance, and dredging. The proposed alignment crosses several agricultural drainages and flood control channels (see Section 4.8, "Biological Resources—Terrestrial," for a list of the drainages and flood control channels).

Table 4.18-2 lists all surface water features that would be parallel to or crossed by the proposed pipeline route and alternatives, including agricultural drainages and flood control channels, except for the Santa Barbara Channel/Gonzales Road Alternative, which is discussed in 4.18.5.2. These are also identified on Figure 4.18-1.

Table 4.18-2 Surface Water Bodies Along the Center Road Route and Alternatives

Location (Milepost [MP])*	Water Body; General Information	Center Road			Point Mugu/ Casper Road	Arnold Road	Santa Barbara/ Gonzales
		Proposed Route	Alt 1	Alt 2			
0.25	Tributary to Pacific Ocean. Unnamed agricultural drainage.	X	X	X			
0-1	Ag/flood control crossing				X	X	
1-2	Ag/flood control crossing				X	X	
1.6–1.8 (Alt 1)	Oxnard Industrial Drain. Concrete flood control channel.		X				
1.8–2.8 (Alt 1)	Rice Road Drain. Concrete flood control channel.		X				
5.0 (Alt 2)	Mugu Drain. Vegetated agricultural drainage. Concreted only at Pleasant Valley Road			X			

Table 4.18-2 Surface Water Bodies Along the Center Road Route and Alternatives

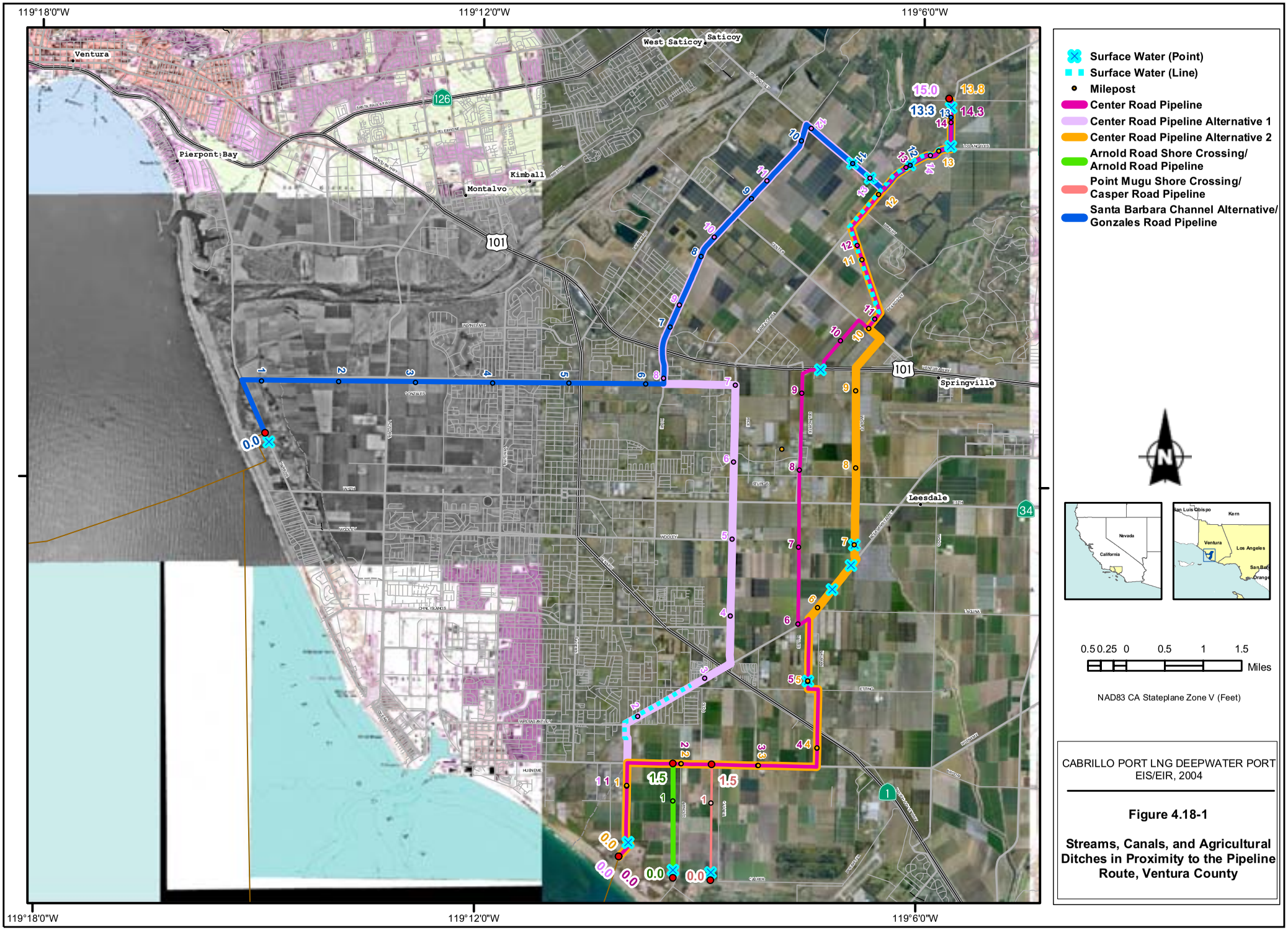
Location (Milepost [MP])*	Water Body; General Information	Center Road			Point Mugu/ Casper Road	Arnold Road	Santa Barbara/ Gonzales
		Proposed Route	Alt 1	Alt 2			
	crossing.						
6.3 (Alt 2)	Tributary to Revolon Slough. Vegetated agricultural drainage. Concreted only at Wolff Road crossing.			X			
6.7 (Alt 2)	Tributary to Revolon Slough. Concrete flood control channel.			X			
7.0 (Alt 2)	Revolon Slough. Concrete flood control channel.			X			
9.5	Nyeland Drain. Concrete flood control channel.	X					
12.7	Tributary to Nyeland Drain. Unnamed, unvegetated agricultural drain.		X				
12.7	Tributary to Nyeland Drain. Unnamed, vegetated agricultural drain.		X				
13.0	Ferro Ditch. Vegetated agricultural/flood control channel.		X				
13.7	La Vista Drain. Other Waters of the U.S. Concrete flood control channel.	X	X	X			X
10.4–10.6	Beardsley Wash. Concrete flood control channel.	X		X			
10.6–11.8	Santa Clara Diversion. Concrete flood control channel.	X		X			
11.8–12.5	Santa Clara Drain. Concrete flood control channel.	X		X			
12.5–13.7	Santa Clara Drain. Vegetated agricultural/flood control drainage.	X		X			
13.0–13.1 (Alt 1)	Los Angeles Drain. Concrete flood control channel.		X				

*The location indicated is based on mileposts for the proposed route, unless otherwise noted.
‘X’’ indicates presence of the surface water feature along the route specified.

Source: Draft BHP Billiton LNG International, Inc., Cabrillo Port Project Wetland Delineation, August 2004.

1

2



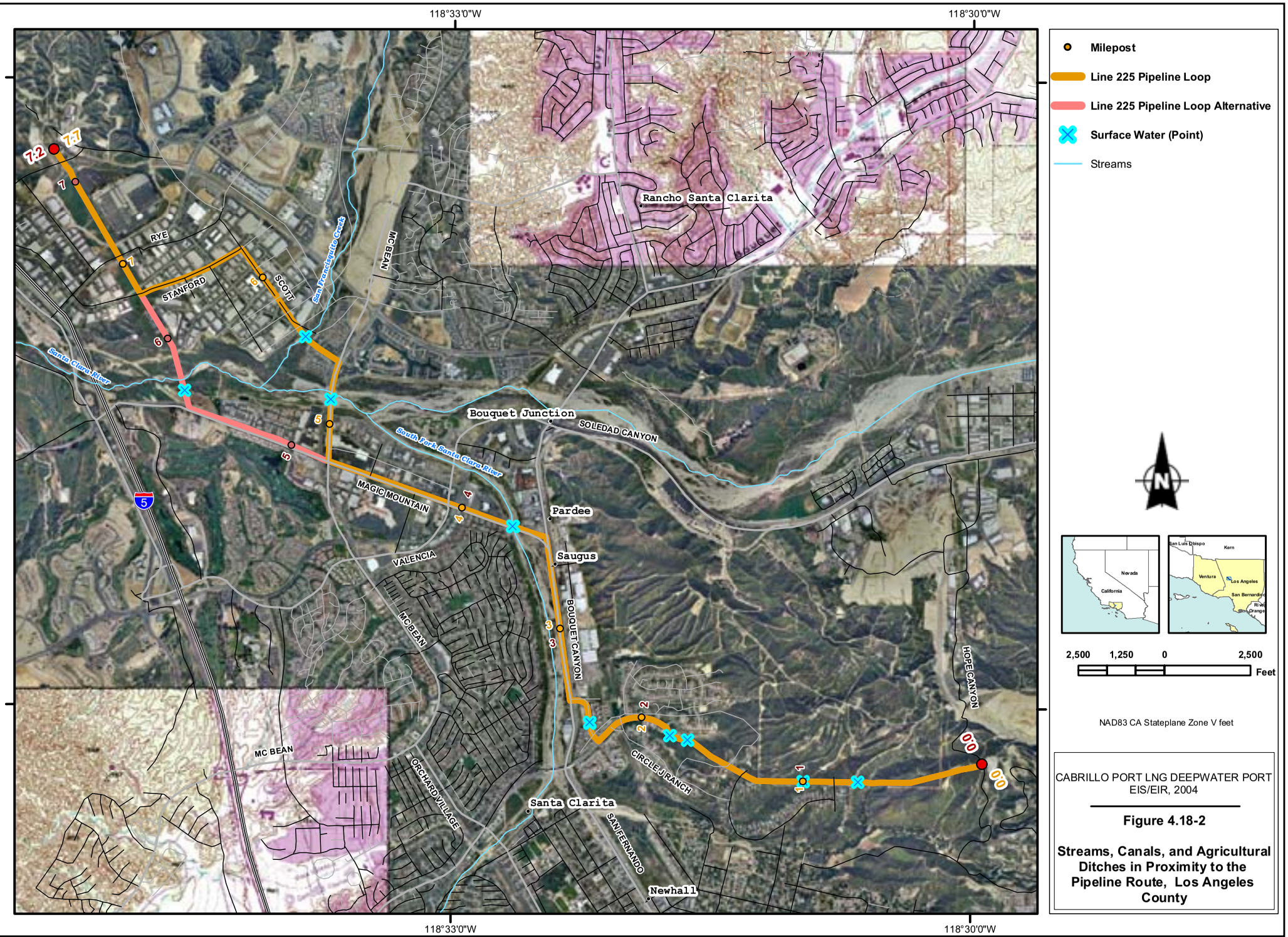
CABRILLO PORT LNG DEEPWATER PORT EIS/EIR, 2004

Figure 4.18-1

Streams, Canals, and Agricultural Ditches in Proximity to the Pipeline Route, Ventura County

\\BUFNT4\gis\sanfrancisco\maps\mxd\letter\Fig4-18-1.mxd 10/15/2004 GRC

Source: Entrix 2004


118°33'0"W
118°30'0"W
Milepost
Line 225 Pipeline Loop
Line 225 Pipeline Loop Alternative
Surface Water (Point)
Streams
Rancho Santa Clarita
RYE
STANFORD
SCOTT
San Francisquito Creek
MC BEAN
Santa Clara River
Bouquet Junction
SOLEDAD CANYON
South Fork Santa Clara River
MAGIC MOUNTAIN
Pardee
Saugus
VALENCIA
MC BEAN
BOUQUET CANYON
HOPE CANYON
CIRCLE J RANCH
MC BEAN
ORCHARD VILLAGE
Santa Clarita
SAN FERNANDO
Newhall
7.2
7.7
7
6
5
4
3
2
1
0.0
N
Nevada
California
San Luis Obispo
Kern
Ventura
Los Angeles
San Bernardino
Orange
2,500
1,250
0
2,500
Feet
NAD83 CA Stateplane Zone V feet
CABRILLO PORT LNG DEEPWATER PORT
EIS/EIR, 2004
Figure 4.18-2
Streams, Canals, and Agricultural Ditches in Proximity to the Pipeline Route, Los Angeles County
\\BUFNT4\GIS\SanFrancisco\Cabrilloport\maps\mxd\letter\Fig-4-18-2.mxd GRC 10-21-04
Source: Entrix 2004

Line 225 Pipeline Loop Project Area

The upper Santa Clara River flows westward through the very broad and low-gradient Santa Clarita Valley. Four major streams occur in the Line 225 Pipeline Loop Project area in the upper Santa Clara River watershed: the mainstem Santa Clara River, the South Fork Santa Clara River, Castaic Creek, and San Francisquito Creek. These streams, at the proposed crossings, are dry throughout most of the year, until the onset of rain in the fall. The Santa Clara River includes a perennial reach downstream of the Line 225 Pipeline Loop because of wastewater discharged from the Valencia Water Reclamation Plant.

Surface water features are located parallel to, or would be crossed by, the proposed Project (see Table 4.18-3 and Figure 4.18-2). The Line 225 Pipeline Loop crosses the South Fork Santa Clara River at Milepost (MP) 3.7 between San Fernando Road and Magic Mountain Parkway. The Line 225 Pipeline Loop would cross the South Fork Santa Clara River (MP 3.7), the Santa Clara River (MP 5.2), and San Francisquito Creek (MP 5.6). The pipeline would cross Santa Clara River and San Francisquito Creek at McBean Parkway by hanging it underneath the open girder bridges. The pipeline across the South Fork Santa Clara River at Magic Mountain Parkway would be installed inside a closed girder bridge. Other crossings such as at several concrete-lined flood control channels may require using existing road bridges or directional drilling. To avoid or reduce impacts to aquatic resources, dry watercourse or minor wet crossings would be open-cut-trenched during the dry season to reduce the potential for erosion.

Table 4.18-3 Surface Water Bodies Along the Line 225 Pipeline Loop

Location (milepost)*	Water Body; General Information	Proposed Route	Alternative
3.7	South Fork Santa Clara River. Vegetated waters and unvegetated natural channel.	X	X
5.2	Santa Clara River	X	
5.6	San Francisquito Creek. Vegetated waters and unvegetated natural channel.	X	
5.7 (Alt)	Santa Clara River		X
2.4	Tributary to South Fork Santa Clara River. Unnamed concrete flood control channel.	X	X
1.7	Unvegetated natural channel	X	X
1.8	Unvegetated natural channel	X	X
1.0	Unvegetated natural channel	X	X
0.7	Unvegetated natural channel	X	X

'X' indicates presence of the surface water feature along the route specified.

*The location indicated is based on mileposts for the proposed route, unless otherwise noted.

Source: Draft BHP Billiton LNG International, Inc., Cabrillo Port Project Wetland Delineation, August 2004.

Impaired Water Bodies

The SWRCB lists impaired water bodies in the State as part of Clean Water Act Regulation 303(d). Table 4.18-4 lists all the impairments (by total maximum daily load [TMDL]), based on water column, sediment, and tissue samples). A TMDL is a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards. A TMDL is the sum of the allowable loads of a single

Table 4.18-4 Clean Water Act Section 303(d) List Impaired Water Bodies in Vicinity of the Cabrillo Port Project (303d list approved July, 2003)

Feature Name	Pollutant/Stressor	Potential Sources	TMDL Priority; *Proposed TMDL Completion*
Center Road Pipeline			
Ormond Beach (near Oxnard Industrial Drain and J Street Drain)	Bacteria Indicators	Nonpoint and Point Sources	Low *No date*
Calleguas Creek Reach 4 (Revolon Slough)	Nitrogen, algae, chlorpyrifos, soluble and insoluble organic compounds (pesticides), toxicity, polychlorinated biphenyls [PCBs], trash	Nonpoint and Point Sources; Agriculture	Low, Medium, and High[1] *2002 and 2004*
Calleguas Creek Reach 5 (Beardsley Channel)	Nitrogen, algae, chlorpyrifos, soluble and insoluble organic compounds (pesticides), PCBs, trash	Nonpoint and Point Sources; Agriculture	Low, Medium, and High *2002, 2003, 2004*[1]
Port Hueneme Harbor	Elevated Tissue Levels (DDT, PCBs)	Nonpoint sources	Medium *No date*
McGrath Lake	Elevated sediment levels (Chlordane, DDT, Dieldrin, PCBs), Fecal Coliform, Sediment Toxicity	Nonpoint Sources; Agriculture; Landfills	Low, Medium[1] *No date*
McGrath Beach	High Coliform Count	Nonpoint source	High *2003*
Calleguas Creek Reach 1 (Mugu Lagoon)	Copper, Mercury, Nickel, Zinc, Bird Reproductivity (DDT), Elevated Tissue Levels (Chlordane, DDT, Endosulfan, Dacthal, Toxaphene, PCBs, Arsenic, Cadmium, Silver), Nitrogen, Elevated Sediment Levels (DDT, Toxaphene), Sediment Toxicity, Excessive Sediment	Nonpoint and Point Sources; Agriculture	Medium *2002*
Line 225 Pipeline Loop			
Santa Clara River Reach 8 - W Pier Hwy 99 to Bouquet Cyn. Rd	Chloride, high coliform count	Nonpoint and Point Sources	Medium, High[1] *2002*

[1]varies depending on pollutant/stressor

Source: Los Angeles Regional Water Quality Control Board (LARWQCB) 2004.

pollutant from all contributing point and nonpoint sources. The calculation must include a margin of safety to ensure that the waterbody can be used for the purposes the State has designated. The calculation must also account for seasonal variation in water quality. Water quality standards are set by States, Territories, and Tribes. They identify the uses for each waterbody, and the scientific criteria to support that use. The Clean Water Act, section 303, establishes the water quality standards and TMDL programs.

4.18.2 Regulatory Setting

Water quality and sediments are regulated pursuant to Federal, State, and local laws and regulations. These regulations prescribe such things as permits for specific activities and regional water quality objectives or standards. Major Federal, State, and local laws and regulations are identified in Table 4.18-5.

Table 4.18-5 Major Laws, Regulatory Requirements, and Plans for Water Quality and Sediments

Law/Regulation/Plan/ Agency	Key Elements and Thresholds; Applicable Permits
International	
International Convention of the Prevention of Pollution from Ships (MARPOL) *- U.S. Coast Guard*	• Annex I requires vessels to be able to store oil residues on board until the residues can be discharged to reception facilities or into the sea, providing the ship is more than 12 nautical miles (NM) from the nearest land. The oil content of the effluent must be less than 100 parts per million (ppm). The ship must have an operational oil discharge monitoring and control system, oily water separating equipment, and oil filtering system or other installation. • Annex IV prohibits the discharge of sewage into the sea, except when: the ship is discharging ground-up and disinfected sewage using a system approved by the Administration at a distance of more than 4 NM from the nearest land or sewage that is not comminuted or disinfected at a distance of more than 12 NM from the nearest land; or the ship operates an approved sewage treatment plant that has been certified by the Administration. The effluent shall not produce visible floating solids in nor cause the discoloration of the surrounding water. • Annex V prohibits dumping floatable dunnage, lining, and packing material within 25 miles of shore. Prohibits dumping other unground garbage within 12 miles.
Federal	
U.S. Clean Water Act (CWA), *- United States Environmental Protection Agency (USEPA); U.S. Army Corps of Engineers (USACE); (LARWQCB)*	• The objective is to restore and maintain the chemical, physical, and biological integrity of our waters. Specifically, - Prohibits discharges of untreated sewage with a fecal coliform bacterial count greater than 200 colonies per 100 milliliters (mL), or total suspended solids exceeding 150 milligrams per 100 milliliters (mg/mL) within 3 NM of the shoreline. - Requires a certified operable Marine Sanitation Device (MSD) on every vessel (U.S. and foreign) with an installed toilet. • Requires the development of a facility-specific Spill Prevention, Control, and Countermeasures (SPCC) Plan for the management of fuels and hazardous materials.

Table 4.18-5 Major Laws, Regulatory Requirements, and Plans for Water Quality and Sediments

Law/Regulation/Plan/ Agency	Key Elements and Thresholds; Applicable Permits
U.S. Clean Water Act, Section 401 *- LARWQCB*	• Section 401 of the CWA requires states to review projects and federal permits to ensure that the projects do not violate state water quality standards.
U.S. Clean Water Act, Section 402 U.S. Clean Water Act *- LARWQCB; USEPA*	• National Pollutant Discharge Elimination System (NPDES) permits apply to point-source discharges and are developed to ensure that these discharges comply with the standards established in the Ocean Plan and/or Basin Plan. • Under the NPDES program, all point sources that discharge directly into waterways are required to obtain a permit regulating the discharge. Each NPDES permit specifies effluent limitations for particular pollutants, and monitoring and reporting requirements for the proposed discharge. • Discharges to Federal waters would require USEPA Region 9 approval and discharges to State waters would require LARWQCB approval. Administration of the NPDES permits, management of monitoring data submitted by permittees, compliance monitoring, and enforcement are the primary responsibility of the states • The discharge of hydrostatic test water generated during onshore pipeline integrity testing would require a NPDES permit. • The NPDES permit regulating stormwater and point-source discharges from the floating storage and regasification unit (FSRU) would be obtained through USEPA Region 9 since it would be situated in Federal waters. The permit would regulate stormwater runoff and graywater discharge from the FSRU and associated facilities. • The discharge of hydrostatic test water generated during subsea pipeline integrity testing would require a separate NPDES permit which would be obtained through USEPA Region 9 and/or the LARWQCB, depending on the discharge location.
U.S. Clean Water Act, Section 404 *- U.S. Army Corps of Engineers (USACE)*	• The USACE is responsible for administering Section 404 Waterways Permits to regulate dredging and filling activities within U.S. waters. The permit would be developed to ensure that the proposed activity is conducted in a manner intended to protect aquatic resources including water quality. A Section 404 Waterways Permit would be necessary for horizontal directional drilling (HDD) or trenching across waters of the United States.
U.S. Oil Pollution Act of 1990 (OPA-90) *- USCG*	• Seeks to prevent and better respond to oil spills. • Prohibits a visible sheen or oil content greater than 15 ppm within 12 miles of shore. • Requires that oily waste be retained on board and discharged at an appropriate reception facility.
Resource Conservation and Recovery Act (RCRA) *- USEPA*	• See Section 4.12, “Hazardous Materials.”

Table 4.18-5 Major Laws, Regulatory Requirements, and Plans for Water Quality and Sediments

Law/Regulation/Plan/ Agency	Key Elements and Thresholds; Applicable Permits
State	
California Porter-Cologne Act. The Porter-Cologne Act (California Water Code Section 13000) - *LARWQCB*	• Governs water quality regulation in California. It establishes a comprehensive program to protect water quality and the beneficial uses of water. The Porter-Cologne Act gives the State Water Resources Control Board and RWQCB broad powers to protect water quality by regulating waste dischargers to water and land, and requiring clean up of hazardous wastes. • The State of California has adopted a general stormwater permit covering nonpoint source discharges from certain industrial facilities and from construction sites involving more than five acres. The General Permit requires preparation of a stormwater pollution prevention plan (SWPPP) and implementation of best management practices to reduce the potential for non-stormwater pollutants (chemicals and sediment) to be discharged from the construction site to waters of the state. • A SWPPP will be prepared and implemented to address the specific water quality concerns for the construction phase of the Project upon request of the LARWQCB.
California Coastal Management Plan, Article 4 *-California Coastal Commission (CCC)*	• Section 30232 states that protection against the spillage of crude oil, gas, petroleum products, or hazardous substances shall be provided in relation to any development or transportation of such materials. • Effective containment and cleanup facilities and procedures shall be provided for accidental spills that do occur.
California Fish and Game Code, Sections 1600-1603. *- California Department of Fish and Game (CDFG)*	• Regulates activities that would "substantially divert or obstruct the natural flow of, or substantially change the bed, channel, or bank of, or use material from the streambed of a natural watercourse" that supports wildlife resources. • A Streambed Alteration Agreement must be obtained for any project that would result in impact on a river, stream, or lake.
California Ocean Plan *- State Water Resources Control Board (SWRCB)*	• Protects beneficial uses of and controls discharges into ocean waters. • The Ocean Plan objectives would be incorporated into the conditions of the NPDES permit and into the Section 401 Water Quality Certification.
Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California *- SWRCB*	• Developed by the SWRCB to establish criteria for thermal discharges to State waters. • Requires: (1) elevated temperature wastes shall be discharged to the open ocean away from the shoreline; (2) elevated temperature wastes shall be discharged a sufficient distance from areas of special biological significance; (3) the maximum temperature of thermal waste discharges shall not exceed the natural temperature of receiving water by more than 20°F; (4) the discharge of elevated temperature wastes shall not result in increases in the natural water temperature exceeding 4°F at (a) the shoreline, (b) the surface of any ocean substrate, or (c) the ocean surface beyond 1,000 feet from the discharge system; (5) the surface temperature limitation shall be maintained at least 50 percent of the duration of any complete tidal cycle; and additional limitations shall be imposed when necessary to

Table 4.18-5 Major Laws, Regulatory Requirements, and Plans for Water Quality and Sediments

Law/Regulation/Plan/ Agency	Key Elements and Thresholds; Applicable Permits
	assure protection of beneficial uses. • The objectives of the Water Quality Control Plan would be incorporated into the conditions of the NPDES permit and into the Section 401 Water Quality Certification review.
Lempert-Keene-Seastrand Oil Spill Prevention and Response Act - *CDFG*	• Seeks to protect the waters of the State from oil pollution and to plan for the effective and immediate response, removal, abatement, and cleanup in the event of an oil spill. • Requires immediate cleanup of spills; following approved contingency plans; and fully mitigating impacts to wildlife. • Requires a SPCC Plan (same as under the CWA).
California Harbors and Navigation Code, Section 7340 - *CDFG*	• Regulates oil discharges and imposes civil penalties and liability for cleanup costs when oil is intentionally or negligently discharged to the waters of the State of California.
Local	
Water Quality Control Plan: Los Angeles Region Basin Plan - *LARWQCB*	• Incorporates by reference all applicable State and Regional Board plans and policies and other pertinent water quality policies and regulations. The Plan designates beneficial uses for surface water and groundwater. • Basin Plan objectives would be incorporated into NPDES permit conditions and into the Section 401 Water Quality Certification review.

NPDES permits would be required for two aspects of this Project. Since the FSRU is not considered a vessel, it would require a NPDES permit from USEPA Region 9 for all discharges that occur during the operations of the facility because it is located in Federal waters. In addition, a NPDES permit would be required from the LARWQCB for onshore construction-related activities that require discharges such as stormwater and hydrostatic water. Obtaining a permit follows the following process:

- The Applicant submits an application;
- Agency reviews the application for completeness and request additional information, if necessary;
- Agency develops effluent limits for each discharge, monitoring requirements, and conditions;
- Agency develops a fact sheet, a draft permit, and publishes a public notice of a draft permit;
- Agency conducts the public review and issuance process;
- Agency issues the final permit and ensures the permit requirements are implemented.

4.18.3 Significance Criteria

For the purposes of the draft Environmental Impact Statement/Environmental Impact Report (EIS/EIR), water quality impacts are considered significant if the Project:

- Violates Federal, State, or local agency water quality standards or objectives;
- Increases contaminant levels in the water column, sediment, or biota to levels shown to have potential to harm marine organisms, even if the levels do not exceed the formal water quality criteria;
- Changes background levels of chemical and physical constituents or causes elevated turbidity that would produce long-term changes in the receiving environment of the site, area, or region that would impair the beneficial uses of the receiving water;
- Causes resuspension of contaminated bottom sediments that would degrade the quality of water downstream in violation of Federal or State agency water quality standards or objectives;
- Places permanent structures within a 100-year floodplain that would impede or redirect flood flows;
- Alters the existing drainage pattern of the site, including alteration of channel bed armoring, bank composition, or stream hydraulic characteristics, in a manner that would result in:
  - An increase in short- or long-term erosion or siltation on- or off-site;
  - An increase in the rate or amount of surface runoff that would exceed the capacity of existing or planned stormwater drainage systems;
  - Flooding on- or off-site; and
  - A change of stream flow that would significantly damage either beneficial uses or aquatic life.

4.18.4 Impact Analysis and Mitigation

This impact analysis discusses Project impacts that occur offshore and onshore, both during construction/installation and during normal Project operations. Effects on marine biota are described in Section 4.7, “Biological Resources—Marine.” Table 4.18-6, below, summarizes impacts and mitigation for Water Quality and Sediments. Applicant-proposed measures (AMM) and agency-recommended mitigation measures (MM) are defined in Section 4.1.

Table 4.18-6 Summary of Water Quality and Sediments Mitigation Measures

Impact	Mitigation Measure(s)
WAT-1: Normal discharges from construction vessels would temporarily degrade offshore water quality (Class III).	**AMM WAT-1a. Use Marine Sanitary Device.** Per USCG regulations, all Project vessels would be equipped with a certified operable Marine Sanitary Device. **MM WAT-1b. Adhere to MARPOL Annex I and IV**

Table 4.18-6 Summary of Water Quality and Sediments Mitigation Measures

Impact	Mitigation Measure(s)
	provisions. All Project construction vessels shall adhere to the provisions of MARPOL Annex I and IV for the discharge of oil or sewage discharge.
WAT-2: Accidental discharges of untreated petroleum, contaminants, graywater, or sewage from construction and installation vessels activities could temporarily degrade offshore water quality (Class III).	**AMM WAT-1a. Use marine sanitary device.** Per USCG regulations, all Project vessels would be equipped with a certified operable Marine Sanitary Device. **AMM HAZ-1a. Develop and Implement a Curtailment Plan.** Develop and implement a critical operations and curtailment plan. **AMM HAZ-1b. Absorbent Materials.** Maintain onboard sufficient quantities of absorbent materials to contain and cleanup small spills. **MM HAZ-1c. Material Safety Data Sheets.** Maintain Material Safety Data Sheets (MSDS) for all hazardous materials stored onboard.
WAT-3: Release of hydrostatic test water used for testing offshore equipment (product swivels, piping, valves) and offshore pipelines) could temporarily degrade water quality (Class III).	**AMM WAT-3a. Use Hydrostatic Test Water from Approved Source.** Hydrostatic test water used for the subsea pipelines would be obtained from an approved source, pursuant to applicable permits. **AMM WAT-3b. Aerate Hydrostatic Test Water.** Hydrostatic water treated with oxygen scavengers would be sufficiently aerated to ensure that the oxygen scavengers are removed before discharge. **AMM WAT-3c. Minimize Use And Regulate Residence Time of Biocide.** The percentage of biocide would be kept sufficiently small and the residence time in the pipelines sufficiently long to render the biocide no longer harmful to sea life upon discharge. **AMM WAT-3d. Environmentally Friendly Oxygen Scavengers.** Every reasonable effort would be made to utilize oxygen scavengers and biocides that are not detrimental to the environment. **MM WAT-3e. Evaluate Hydrostatic Test Water Before Release.** Before discharge, the hydrostatic test water shall be evaluated by a qualified biological monitor. **MM WAT-3f. Monitor the Release of Test Water.** A qualified biological monitor shall be on site prior to and during the release of the test water.
WAT-4: The installation of the FSRU and subsea pipelines could disturb seafloor sediments, causing a short-term increase in turbidity or accidental unearthing of contaminants (Class III).	None.
WAT- 5: Accidental releases of drilling fluids at the shore or stream crossings during construction could degrade surface water or groundwater quality for the short term (Class II).	**MM WAT-5a: Prepare and Implement HDD Contingency Plan.** The Applicant shall develop a release of drilling muds contingency plan to minimize the potential for releases of drilling muds.

Table 4.18-6 Summary of Water Quality and Sediments Mitigation Measures

Impact	Mitigation Measure(s)
	MM WAT-5b. Strategic Location for Drilling Muds and Cuttings Pit. The Applicant shall ensure a pit has been excavated at the exit hole to collect and contain the drilling muds and cuttings.
WAT-6: Discharge of hydrostatic water used to test the onshore pipelines could release contaminants to surface water or groundwater, causing short-term degradation of water quality (Class III).	**AMM WAT-3a. Use Hydrostatic Test Water from Approved Source.** **AMM WAT-3b. Aerate Hydrostatic Test Water.** **AMM WAT-3c. Minimize Use And Regulate Residence Time of Biocide.** **AMM WAT-3d. Environmentally Friendly Oxygen Scavengers.** **MM WAT-3e. Evaluate Hydrostatic Test Water Before Release.** **MM WAT-3f. Monitor the Release of Test Water.**
WAT-7: HDD and trenching at stream crossings, including release of hydrostatic test water, could cause short-term increases in erosion (Class II).	**MM WAT-5b. Strategic Location for Drilling Muds and Cuttings Pit.** **MM WAT-7a. Erosion Control Plan.** The Applicant shall develop an Erosion Control Plan and the plan must be submitted to and approved by the CSLC at least 60 days before construction of the Project begins. **MM WAT-7b. Energy Dissipater for** Hydrostatic Test Water Discharge. For the hydrostatic test water discharge, the Applicant shall design and install a suitable energy dissipater at the outlets and design and install suitable channel protection structures **MM WAT-7c. Transport Sediment Spoils Off-Site.** Sediment spoils that are not utilized to fill trenches in stream channels shall be transported off site. **MM WAT-7d. Re-establish Contours and Vegetative Cover/Pavement.** Contours and vegetative cover/pavement shall be re-established as soon as practicable following disturbance. **MM WAT-7e. Monitor Stream Crossing Construction.** A qualified biological monitor shall be present at each stream crossing construction site to ensure compliance with applicable permits and mitigation.
WAT-8: Normal releases of graywater, deck drainage, brine, ballast, and could release small amounts of contaminants, including petroleum, detergents or human waste, to marine waters, although not in excess of water quality standards (Class III).	**AMM WAT-8a. Treat Sewage.** Sewage from the FSRU would be treated in an International Maritime Organization (IMO)-approved system. **AMM WAT-8b. Treat Graywater.** The graywater shall be treated using filtration to separate particulate matter and ultraviolet (UV) oxidation to destroy dissolved organic materials.
WAT-9: Accidental releases of graywater or oily deck drainage could release small amounts of	**AMM HAZ-1a. Develop and Implement a Curtailment Plan.** Develop and implement critical

Table 4.18-6 Summary of Water Quality and Sediments Mitigation Measures

Impact	Mitigation Measure(s)
contaminants, including petroleum, detergents or human waste, to marine waters, in excess of water quality standards (Class II).	operations and curtailment plan. **AMM HAZ-1b. Absorbent Materials.** Maintain onboard sufficient quantities of absorbent materials to contain and cleanup small spills. **AMM HAZ-2a. Manage Used Oil in Accordance with USEPA and State Requirements.** Ensure that appropriate containers would be used for all oil in storage and in transport. **MM HAZ-1c. Material Safety Data Sheets.** Maintain Material Safety Data Sheets (MSDS) for all hazardous materials stored onboard. **MM HAZ-2b. Storage of Hazardous Materials** applies here. **MM WAT-9a. Systems Inspections.** The sewage treatment and oil-water separator systems shall be inspected by a qualified engineer annually to ensure it is functioning properly.
WAT-10: Releases of petroleum or other contaminants during maintenance activities could temporarily degrade surface water quality (Class III).	**AMM WAT-10a. Best Management Practices (BMPs) at Creek Crossings.** Best management practices such as using silt fencing and hay bales would be employed at all creek crossings for major maintenance activities that could result in spills that could enter surface water pathways. **AMM WAT-10b. Spill Response Plan.** The Applicant would prepare a Spill Response Plan to protect surface water at and near the surface water crossings.
WAT-11: Regular maintenance of the pipelines could cause erosion and sedimentation of creeks from the use of maintenance vehicles or equipment, leading to short-term violations of water quality standards (Class III).	**AMM WAT-10a** and AMM **WAT-10b**.

4.18.4.1 Offshore – Construction/Installation

Impact WAT-1: Temporary Degradation of Offshore Water Quality due to Normal Vessel Discharges

Normal discharges from construction vessels would temporarily degrade offshore water quality (Class III).

The normal operations of the marine vessels' engines can result in small releases of petroleum or oily bilge water. Effects of a release can be highly variable, depending on the type, quantity, and location of the discharge.

Residual oil, lubricants, and fuel may accumulate in the bilge (i.e., the lowest part within the interior hull) of vessels. Vessels either retain oily bilge water onboard in a slop tank for disposal onshore or run the dirty bilge water through an oil-water separator and

pump only the clean water overboard. In this case, the remaining oil would be sent to a holding tank, where it would be transferred to a supply boat for disposal onshore. In addition, MARPOL Annex I mandates that oil content of effluent can not exceed 100 parts per million (ppm) and that ships mush have operation oil discharge monitoring and control systems, oily water separating equipment, and oil filtering system or other installation.

All Project construction vessels would be required to adhere to the provisions of MARPOL Annex I and IV for the discharge of oil or sewage discharge.

AMM WAT-1a. **Marine Sanitary Device.** Per USCG regulations, all Project vessels would be equipped with a certified operable Marine Sanitary Device.

Mitigation Measures for Impact Wat-1: Temporary Degradation of Water Quality Due to Discharges

MM WAT-1b. **Adhere to MARPOL Annex I and IV.** All Project construction vessels shall adhere to the provisions of MARPOL Annex I and IV for the discharge of oil or sewage discharge.

No additional mitigation measures are necessary. This impact is less than significant.

Impact WAT-2: Temporary Degradation of Offshore Water Quality due to Accidental Discharges

Accidental discharges of untreated petroleum, contaminants, graywater, or sewage from construction and installation vessels activities could temporarily degrade offshore water quality (Class III).

Vessels supporting installation of the FSRU and subsea pipelines would increase the potential for accidental discharges of petroleum hydrocarbons, contaminants, sewage, or graywater exceeding water quality standards.

Small spills may occur from normal use of oils, lubricants, or solvents. During construction, these discharges would be anticipated to be small and infrequent. The degradation of water quality due to these small accidental discharges would be highly localized or limited to the immediate area of discharge, and the effects would be temporary because much of the discharged contaminant would dissipate or evaporate quickly. For example, if a release of oily bilge water were to occur, any contamination would be localized in the area of discharge. Because single discharge volumes would contain relatively small amounts of petroleum, this would have little or no long-term effect on ambient water quality.

Construction and supply vessels could accidentally discharge graywater or treated sewage. However, any accidental discharge of untreated sewage would be unlikely or infrequent. While the discharge may contain harmful constituents, it would be in relatively small amounts and in the open ocean it would dissipate rapidly.

Mitigation Measures for Impact Wat-2: Temporary Degradation of Water Quality Due to Accidental Discharges

AMM WAT-1a. **Marine Sanitary Device** applies here.

These mitigation measures from Section 4.12, "Hazardous Materials," also apply here:

AMM HAZ-1a. **Develop and Implement a Curtailment Plan.** Develop and implement a critical operations and curtailment plan.

AMM HAZ-1b. **Absorbent Materials.** Maintain onboard sufficient quantities of absorbent materials to contain and cleanup small spills.

MM HAZ-1c. **Material Safety Data Sheets.** Maintain Material Safety Data Sheets (MSDS) for all hazardous materials stored onboard.

This impact is less than significant and mitigation measures are not necessary. However, incorporation of these measures would further reduce any adverse impacts.

Impact WAT-3: Temporary Degradation of Water Quality due to Hydrostatic Test Water Releases from Offshore Equipment Testing

Release of hydrostatic test water used for testing offshore equipment (product swivels, piping, valves, and offshore pipelines) could temporarily degrade water quality (Class III).

A full hydrostatic test would be completed to check the pressure integrity of product swivels, piping, and valves. For the subsea pipelines, approximately 2.5 million gallons (9,500 m^3) of test water from an approved source, which is likely to be the City of Oxnard municipal supply, would be used to hydrostatically test the subsea pipelines. The exact location where the water would be discharged has not been determined but would likely be a wastewater treatment plant.

The Applicant would not chemically treat the hydrostatic test water for sections of the pipelines where the residence time of the water in the pipelines is less than 10 to 14 days. If a longer residence time is required, oxygen scavengers and biocides would be added to limit corrosion. The actual residence time would be chemical-specific.

If the hydrostatic test water is discharged to the ocean, contaminants could be discharged to marine water.

The Applicant has incorporated the following mitigation measures into the proposed Project to reduce the potential effects from the release of hydrostatic water:

AMM WAT-3a. **Use Hydrostatic Test Water from Approved Source.** Hydrostatic test water used for the subsea pipelines would be obtained from an approved source, pursuant to applicable permits.

AMM WAT-3b. **Aerate Hydrostatic Test Water.** Hydrostatic water treated with oxygen scavengers would be sufficiently aerated to ensure that the oxygen scavengers are removed before discharge.

AMM WAT-3c. **Minimize Use And Regulate Residence Time of Biocide.** The percentage of biocide would be kept sufficiently small and the residence time in the pipelines sufficiently long to render the biocide no longer harmful to sea life upon discharge.

AMM WAT-3d. **Environmentally Friendly Oxygen Scavengers.** Every reasonable effort would be made to utilize oxygen scavengers and biocides that are not detrimental to the environment.

By using aeration during discharge, oxygen scavengers would be removed and therefore the discharge would not adversely affect water quality. With a low percentage of biocide and sufficient residence time in the pipelines, the biocide would no longer harmful to sea life upon discharge. These potential impacts would be temporary and localized and therefore are considered less than significant.

Mitigation Measures for Impact WAT-3: Temporary Degradation of Water Quality due to Hydrostatic Test Water Releases

MM WAT-3e. **Evaluate Hydrostatic Test Water Before Release.** Before discharge, the hydrostatic test water shall be evaluated by a qualified biological monitor to ensure that it meets local, State, or Federal water quality standards.

MM WAT-3f. **Monitor the Release of Test Water.** A qualified biological monitor shall be on site prior to and during the release of the test water to ensure compliance with permit requirements and shall ensure the released water meets local, State, or Federal water quality standards.

This impact is less than significant and mitigation measures are not necessary. However, incorporation of these measures would further reduce any potential adverse impacts.

Impact WAT-4: Short-Term Increase in Turbidity or Accidental Unearthing of Contaminants during Offshore Construction

The installation of the FSRU and subsea pipelines could disturb seafloor sediments, causing a short-term increase in turbidity or accidental unearthing of contaminants (Class III).

During installation of the FSRU and pipeline, approximately 511 acres (206.8 hectares [ha]) of seafloor would be temporarily disturbed and thus temporarily increase turbidity in the water column. The disturbance of seafloor sediments during the installation of the FSRU, mooring system, and offshore pipelines could degrade water quality because of

an increase in turbidity or resuspension of contaminated sediments. The temporary increase in turbidity could reduce light penetration, discolor the ocean surface, alter the ambient water chemistry such as pH and dissolved oxygen (DO) content, or interfere with filter-feeding benthic organisms sensitive to increased turbidity. The effects on water quality would be short-term and highly localized and therefore considered less than significant.

During a nine-day period (24 hours per day), nine high-holding-power conventional drag-embedded anchors would be placed on the seabed and dug in for embedment; therefore, turbidity would increase near the seafloor for this period of time. The change to water quality in this area would be expected to be minimal given the depth of water (2,850 feet, or 869 meters [m]), and the effect would last only for the period of embedment. Therefore, the impact on water quality would be less than significant.

The subsea pipelines would be laid on the seafloor, except for the part deeper than 42.7 feet (13 m). Three telecommunication cables would be crossed: the Navy RELI cable, the Navy FOCUS cable, and the Global West cable. Both of the Navy cables are buried beneath the seabed while the Global West cable is laid on the sea floor. Concrete pillows would be installed for the pipeline to rest above the cable. As the pipeline is laid and where the pillows are installed, sediments immediately under and adjacent to the pipeline and pillows would be dislodged and suspended in the water column. The increase in turbidity would depend on the size of the particles and the force by which the pipeline is laid. Nonetheless, the suspension of sediments would be localized and temporary. Turbidity levels would be anticipated to return to their normal range quickly; therefore, the effect on water quality would be not significant.

Preparation of the horizontal directional drilling (HDD) exit hole locations would involve excavating an area for drill cuttings to accumulate. Turbidity would increase in the vicinity of the exit holes while HDD occurs. The change in turbidity would be expected to last only for the period of drilling and would be temporary, highly localized, and not significant.

Some sediments may be contaminated with pollutants such as heavy metals. However, there are no known locations of contaminated sediments at the mooring turret or along the subsea pipeline route and therefore there is no anticipated release of pollutants (see Section 4.12, “Hazardous Materials.”)

Mitigation Measure(s) for Impact WAT-3: Short-Term Increase in Turbidity or Accidental Unearthing of Contaminants

Mitigation measures are not necessary. This impact is less than significant.

4.18.4.2 Onshore – Construction/Installation

Impact WAT-5: Short-Term Degradation of Surface Water or Groundwater Quality due to Accidental Release of Drilling Fluids

Accidental releases of drilling fluids at the shore or stream crossings during construction could degrade surface water or groundwater quality for the short term (Class II).

The Project would include shore and stream HDD crossings. Under normal operations, drilling fluids would remain in the HDD boreholes. Drilling fluids from drilling equipment include oils, hydraulic fluid, and drilling mud (bentonite slurry). If cracks or fissures in the subsurface are encountered during drilling, drilling fluids can travel along them to the groundwater and enter adjacent surface water bodies. Releases of drilling muds (inadvertent return of drilling fluids [muds] such as bentonite) could temporarily reduce water quality where released.

An evaluation of the effects of releases of drilling muds on terrestrial resources is presented in Section 4.8, "Biological Resources—Terrestrial," and a discussion of the releases of drilling muds in upland areas is presented in Section 4.12, "Hazardous Materials." By incorporating mitigation measures, this impact associated with HDD would be reduced to less than significant.

Mitigation Measure(s) for Impact Wat-5: Short-Term Degradation of Surface Water or Groundwater Quality due to Accidental Release of Drilling Fluids

MM WAT-5a. **Prepare and Implement HDD Contingency Plan.** The Applicant shall develop a release of drilling muds contingency plan to minimize the potential for releases of drilling muds associated with HDD activities and to ensure a timely response if any releases of drilling muds occur. The Plan shall identify measures to be taken to avoid a release of drilling muds and immediate measures to be taken if a release of drilling muds occurs. At least 60 days prior to construction, this Plan shall be submitted to the California State Lands Commission (CSLC). The CSLC may request review by the Los Angeles Regional Water Quality Control Board (LARWQCB). The Plan would incorporate best management practices to reduce the impacts from releases of drilling muds, including the following:

- Maintaining containment equipment for drilling fluids on site;
- Adding a non-toxic color dye to the HDD drilling fluids in order to easily and quickly detect release of drilling muds;
- Ensuring that a qualified biological monitor is on-site full time near sensitive habitat areas during HDD activities;
- Stopping work immediately if there is any detection of bentonite seeps into surface water or sensitive habitats, for example, by a

loss in pressure or visual observation of changes in turbidity or surface sheen; and

- Reporting all bentonite seeps into waters of the State or sensitive habitat immediately to the Project's resource coordinator, CSLC, Los Angeles RWQCB, and the appropriate resource agencies: NOAA Fisheries, U.S. Fish and Wildlife Service (USFWS), U.S. Army Corps of Engineers (USACE), the Department of Water Resources, the Reclamation Board, the applicable city (Oxnard or Santa Clarita) and county (Ventura or Los Angeles).

MM WAT-5b. **Strategic Location for Drilling Muds and Cuttings Pit.** The Applicant shall ensure a pit has been excavated at the exit hole to collect and contain the drilling muds and cuttings. Strategic measures—such as a turbidity curtain around the pit—shall be taken to ensure that fluids remain contained in the pit, including:

- Locate the entry pit and exit pit sufficiently far from a stream bank and at a sufficient elevation to avoid inundation by the stream and to minimize excessive migration of groundwater into the entry pit or exit pit;
- Isolate the entry pit and exit pit with silt fencing to avoid sediment transport into the surface water body;
- Isolate the spoils storage from the excavation of the entry pit using silt fencing to avoid sediment transport;
- If drilling mud congeals, take no other action that would potentially suspend sediments in the water column;
- If drilling mud does not congeal, erect isolation/containment environments (underwater boom and/or turbidity curtains);
- If the fracture becomes excessively large, call in a spill response team to contain and clean up excess drilling mud in the water;
- Undertake and complete proper disposal of excess spoils; backfill and restore the original contour of the entry pit and exit pit; and then revegetate upon completion of the bore;
- If a release of drilling muds occurs, a qualified biological monitor should monitor the drilling mud congeals to determine the appropriate cleanup response; and
- Consult with regulatory agencies to determine the next appropriate step to clean up the area.

With the implementation of these measures this impact will be reduced to a less than significant level.

Impact WAT-6: Short-Term Degradation of Surface Water Quality due to the Release of Contaminants in Hydrostatic Test Water from Testing of Onshore Pipelines

Discharge of hydrostatic water used to test the onshore pipelines could release contaminants to surface water or groundwater, causing short-term degradation of water quality (Class III).

An estimated 3.25 million gallons (12,300 m^3) of water would be used to test the two onshore pipelines. Water would be obtained from a potable water source along the route. The hydrostatic test water would not be chemically treated for sections of the pipelines where the residence time of the water in the pipelines is less than 10 to 14 days. If a longer residence time is required, oxygen scavengers and biocides would be added to limit corrosion.

The release of hydrostatic water could introduce biocides and oxygen scavengers to a natural waterbody. As a result, the available oxygen in the water could decrease and biota could be harmed. These contaminants could degrade the aquatic habitat of the waterbody to which the water is introduced.

The Applicant has not determined the location of release of the hydrostatic test water. It could be discharged to an existing channel or wash along the route, or it could be stored in tanks and hauled to a wastewater treatment facility. In any case, this would be done pursuant to an approved NPDES permit.

If the water is discharged to an existing surface water feature, thee potential impacts would be temporary and localized and therefore are considered less than significant.

The Applicant has incorporated the following into the proposed Project:

AMM WAT-3a. **Hydrostatic Test Water from Approved Source** applies here.

AMM WAT-3b. **Aerate Hydrostatic Test Water** applies here.

AMM WAT-3c. **Minimize Use and Regulate Holding Time of Biocide** applies here.

AMM WAT-3d. **Environmentally Friendly Oxygen Scavengers** applies here.

Mitigation Measure(s) for Impact Wat-6: Short-Term Degradation of Surface Water Quality due to the Release of Contaminants in Hydrostatic Test Water

MM WAT-3e. **Evaluate Hydrostatic Test Water Before Release** applies here.

MM WAT-3f. **Monitor the Release of Test Water** applies here.

This impact is less than significant and mitigation measures are not necessary. However, incorporation of these measures would further reduce any adverse impacts.

Impact WAT-7: Short-Term Increase in Erosion due to Construction Activities

HDD and trenching at stream crossings, including release of hydrostatic test water, could cause short-term increases in erosion (Class II).

The movement of equipment and materials during construction could destabilize the soil surface and increase erosion potential from water and wind along the route and in the staging areas. Construction activities and loss of vegetation could cause accelerated erosion on steep slopes and in erosion-susceptible soils. Also, construction activities could cause erosion before vegetation is re-established. Any of these scenarios could lead to potential sedimentation of nearby creeks and drainages. The most likely time for erosion to occur is after initial disturbance of the unpaved ground surface and before re-establishment of vegetative cover or placement of pavement, as appropriate. A soil's susceptibility to erosion varies and is a function of its characteristics such as texture and structure; topography (steepness of slope); surface roughness; amount of surface cover (vegetative or other); and climate. Erosion potential increases the longer soils are left bare. Erosion from water mainly occurs in loose soils on moderate to steep slopes, particularly during high-intensity storm events. Changes in drainage patterns as a result of the Project's construction could result in erosion of the soil following construction. Erosion is not anticipated in the Center Road Pipeline area or in areas adjacent to the proposed alternatives because of the relatively flat to gently sloping topography; however, there are certain soils along the pipeline that have slight to moderate erosion potential because they have a slight slope (between 2 and 9 percent) (see Section 4.5, "Agriculture and Soils"). Erosion in this area could lead to increased turbidity in agricultural drainages. Erosion could occur along parts of the Line 225 Pipeline Loop located in mountainous terrain with slopes ranging from 2 to 50 percent. Erosion in this area could increase the turbidity in the Santa Clara River or one of its tributaries.

Construction of the proposed pipelines would include several stream crossings. HDD and trenching activities through dry stream channels and excavation of drilling pits, could lead to sedimentation of stream channels.

The Applicant has incorporated the following into the proposed Project:

AMM HAZ-5b. **Storm Water Pollution Prevention Plan** applies here (see Section 4.12, "Hazardous Materials")**.**

Mitigation Measure(s) for Impact WAT-7: Short-Term Increase in Erosion due to Construction Activities

MM WAT-7a. **Erosion Control Plan.** The Applicant shall develop an Erosion Control Plan and the plan must be submitted to and approved by the CSLC at least 60 days before construction of the Project begins. Erosion and drainage control measures proposed by the Applicant include water bars, drainage ditches, culverts, silt fences, and energy dissipaters. The following measures, or comparable measures based on site-specific features, shall be addressed to

minimize the incidence of sediment mobilization during construction:

- Clear vegetation to the minimal area needed to conduct the construction activities;
- Sidecast all excavated material in upland habitat areas within the work area;
- Protect any work near or adjacent to any drainage or wetland through the installation of orange construction fencing, backed by silt fencing;
- Stabilize all disturbed soils by compaction and recontouring the entire area to pre-construction grades upon completion of the pipeline construction work;
- Direct runoff away from disturbed areas using temporary drainageways;
- Monitor turbidity downstream of the drill or trenching site(s);
- Stabilize plant site roadways by compaction or use of gravel;
- Use soil stabilizers (most commonly water) on disturbed areas as appropriate and as required by Ventura County Air Pollution Control District (VCAPCD) and South Coast Air Quality Management District (SCAQMD) rules as applicable;
- Use straw bale barriers to intercept sediment-laden runoff from small areas of disturbed soil;
- Create straw check dams to reduce erosion of existing drainage channels and to promote sedimentation behind the dam;
- Create stormwater retention basins to retain runoff and allow excessive sediment to settle out;
- Inspect temporary erosion control devices during construction in accordance with the Final Plan schedule;
- Replace damaged or missing structures immediately;
- Notify Project construction crews regarding when to implement adequate precautions in anticipation of poor weather conditions;
- Dictate appropriate wetness when watering a road for dust suppression;
- Develop remedial erosion controls for problem areas, if any;
- Protect stockpiled soil from runoff with hay bales or silt fencing; suppress dust with water;
- Install temporary slope breakers (water bars or berms) where the grade is steep enough to require such measures in order to

divert water from the construction right-of-way (ROW) and to reduce velocities;

- Install slope breakers at spacing recommended by the Natural Resources Conservation Service (NRCS);
- Construct slope breakers from soil, silt fences, or staked hay or straw bales;
- Inspect, replace and repair straw bale barriers and/or check dams as needed and remove accumulated sediment when it reaches a depth of 6 inches;
- Inspect sandbags placed along the toes of slopes and at linear facility structures, removing sediment after each significant storm event and depositing the sediment in a stable area not subject to erosion;
- Remove or re-grade sediment that accumulates more than 1 foot behind the (sandbag) barrier;
- Inspect protected storage areas for stockpiled soils or other materials;
- Depending on the season, inspect slope breakers in areas of active equipment or within 24 hours of each 0.5 inch of rainfall; and
- Maintain slope breakers until revegetation measures are successful or the area is stabilized.

A qualified biological monitor shall ensure these requirements are continually being met and will have the authority to shut down construction if they are not.

MM WAT-7b. **Energy Dissipater for Hydrostatic Test Water Discharge.** For the hydrostatic test water discharge, the Applicant shall design and install a suitable energy dissipater at the outlets and design and install suitable channel protection structures to ensure that there would be no erosion or scouring of natural channels within the affected watershed. Sandbags, rocks, or other materials or objects installed shall be removed from the site upon completion of hydrostatic testing.

MM WAT-7c. **Transport Sediment Spoils Off-Site.** Sediment spoils that are not utilized to fill trenches in stream channels shall be transported off site.

MM WAT-7d. **Re-establish Contours and Vegetative Cover/Pavement.** Contours and vegetative cover/pavement shall be re-established as soon as practicable following disturbance.

MM WAT-7e. **Monitor Stream Crossing Construction.** A qualified biological monitor shall be present at each stream crossing construction site to ensure compliance with applicable permits and mitigation.

With the application of these mitigation measures, designed to alleviate soil erosion during and after construction, the potential erosion impacts associated with the Project would be reduced to less than significant.

4.18.4.3 Offshore - Operations

Impact WAT-8: Degradation of Water Quality due to Normal Release of Treated Discharges During Offshore Operations

Normal releases of graywater, brine, ballast, and other substances could release small amounts of contaminants, including petroleum, detergents, or human waste, to marine waters, although not in excess of water quality standards (Class III).

The FSRU would be required to have a facility-specific wastewater discharge permit (NPDES) that contains specific measures for all discharges. During normal operations on the FSRU, the discharges from the FSRU would be regulated by an NPDES permit, and the discharges would be in the acceptable range of the permit requirements. This includes graywater, deck drainage, wash-down water, fire-suppression water, and brine.

Graywater

The total volume of graywater produced on the FSRU would be approximately 2,600 gallons (9.8 m^3) per day, assuming an average crew of 30 and that the average crew member would generate 75 gallons (0.28 m^3) of graywater per day. This includes water used as wash-down water. In the proposed system on the FSRU, sewage would be collected, ground up, and disinfected in an IMO-approved system. Graywater would be added to this treated sewage, and this mixture would then be disinfected with chlorine and discharged. Any generated sludge would be containerized for subsequent transfer to shore for disposal. Impacts occurring as a result of these regulated discharges would be less than significant.

Deck drainage

Runoff from the deck will be treated using an oil-water separator; the resulting discharge will meet discharge standards. Oily deck drainage produced on the FSRU would be approximately 12,900 gallons (48.8 m^3) per day. The oil would be sent to a holding tank, where it would be transferred to a supply boat for disposal onshore. Impacts occurring as a result of these regulated discharges would be less than significant.

Fire-suppression water

The volume of seawater used for annual testing of the main fire system would be 520 yd^3 (400 m^3) per year. The volume for testing the firewater pumps is 20,400 yd^3 (15,600

m^3) per year, and testing of deluge valve will require 2,940 yd^3 (2,250 m^3) per year. The source of the water for these tests would be excess water produced from the submerged combustion vaporizers. Impacts occurring as a result of these regulated discharges would be less than significant.

Brine

The Applicant would use two seawater desalination units powered by waste heat recovery from the power generator engines to produce potable water. The units would produce 0.5 m^3 per hour of fresh water each, from a seawater throughput of 1.4 m^3 per hour (assuming 70 percent efficiency). The brine discharge from the unit to the ocean would be approximately 1.9 million gallons (7,500 m^3) per year. This brine may cause an increase of the salinity in the immediate vicinity of the FSRU, but would dissipate and dilute rapidly. Impacts occurring as a result of these regulated discharges would be less than significant.

Some discharges from the FSRU would not be regulated. These include the excess water from the submerged combustion vaporizers and ballast water.

Submerged Combustion Vaporizers

Another permitted discharge from the FSRU would be the water from the submerged combustion vaporizers. The average discharge per day would be approximately 199,680 gallons (755.9 m^3), based on the operations of five of the eight submerged combustion vaporizers. This water would accumulate in the submerged combustion vaporizer water bath and eventually must be discharged. This excess water, consisting of clean, distilled water, would be treated with bicarbonate of soda to neutralize the acid from exhaust gases and would be discharged overboard. Impacts occurring as a result of this discharge would include changing the salinity immediately adjacent to the discharge. However, given the volume of the water discharged per day, an adverse effect on water quality is unlikely.

Ballast Water

Discharge of ballast water must be done in accordance with MARPOL, State, and USCG regulations and protocols. During FSRU ballast operations, ocean water would be pumped into ballast tanks and shifted from one tank to another to keep the vessel evenly balanced or discharged back to the ocean, as required. Ballast water would not be chemically treated, and pumps would be screened to minimize entrainment of aquatic organisms. LNG carriers would come to the FSRU carrying some ballast water. Ballast water would be exchanged outside the 200-NM (230 mile [371 km]) statutory limit according to regulations. While offloading their LNG cargo, the carriers would do just the opposite of the FSRU and pump ballast water into their tanks to compensate for the weight of LNG discharged to the FSRU. Any discharge of ballast water would contain little or no petroleum or other wastes. The discharge of ballast water would contain no or relatively minimal amounts of contaminants, and the impacts, if any, to

receiving waters would be highly localized and temporary. Impacts occurring as a result of these regulated discharges would be less than significant.

The Applicant has incorporated the following measures into the Project:

AMM WAT-8a. **Treat Sewage.** Sewage from the FSRU would be treated in an International Maritime Organization (IMO)-approved system.

AMM WAT-8b. **Treat Graywater.** The graywater shall be treated using filtration to separate particulate matter and ultraviolet (UV) oxidation to destroy dissolved organic materials.

Mitigation Measure(s) for Impact Wat-8: Degradation of Water Quality due to Release of Regulated Discharges During Operations

None identified. This impact is considered less than significant.

Impact WAT-9: Degradation of Water Quality due to Accidental Release of Untreated Graywater, Deck Drainage, and other Regulated Discharges that do Not Meet Water Quality Standards

Accidental releases from the FSRU could release small amounts of contaminants, including petroleum, detergents, or human waste, to marine waters, in excess of water quality standards (Class II).

During normal operations on the FSRU, the discharges from the FSRU would be regulated by an NPDES permit, and the discharges would be in the acceptable range of the permit requirements.

Although unlikely, the FSRU could accidentally release graywater or deck drainage before they are treated adequately to meet water quality standards and the condition of the NPDES permit. In addition, accidental spills of materials used on the FSRU could occur.

Graywater

In the unlikely event that the mixture is not adequately treated, the discharge may exceed water quality standards. The relatively small discharge would be highly localized and not result in a significant impact to water quality in the Project vicinity.

Supply vessels could also discharge graywater or treated sewage, but this would not be regulated by the NPDES permit for the FSRU. The relatively minor increase in the amount from these vessels would not result in a significant increase in the total discharge in the Project vicinity.

Deck Drainage

Deck drainage may include small onboard spills of paints, oils, cleaning solutions, or other materials. In the unlikely event that the oil-water mixture is not adequately

separated, the discharge may exceed water quality standards. The relatively small discharge would be highly localized and not result in a significant impact to water quality.

Accidental Spills or Leaks

Onboard, the FSRU would have approximately 264,000 gallons (1,000 m^3) of diesel fuel in two steel single-skin tanks with secondary containment. The tanks would be located aft, under the deck area on level four. Spills or leaks from these tanks would be contained in the secondary containment system and likely would not be released to the marine environment, given the position of the tanks onboard. This impact also is discussed in Section 4.12, "Hazardous Materials."

These discharges would be relatively small and infrequent. The degradation of water quality due to these small discharges would be highly localized and limited to the immediate area of discharge and would be temporary because much of the discharged contaminant would dissipate or evaporate quickly. Because single discharge volumes would contain relatively small amounts of petroleum, this would have little or no long-term effect on ambient water quality and would not likely represent a regulatory violation.

Compliance with the SPCC Plan, the SWPPP, and the NPDES permit would ensure that the potential for degradation of water quality would be less than significant. Therefore, with the implementation of these mitigation measures, the impacts of potential hazardous material and oil spills would be less than significant.

The Applicant has incorporated the following into the Project:

AMM HAZ-1a. **Develop and Implement a Curtailment Plan.** Develop and implement critical operations and curtailment plan.

AMM HAZ-1b. **Absorbent Materials.** Maintain onboard sufficient quantities of absorbent materials to contain and cleanup small spills.

AMM HAZ-2a. **Manage Used Oil in Accordance with USEPA and State Requirements.** The Applicant has proposed that used oil would be returned to shore in the same labeled and Department of Transportation (DOT)-approved containers used to provide the replacement oil, which would ensure that appropriate containers would be used for all oil in storage and in transport.

Mitigation Measure(s) for Impact WAT-9: Degradation of Water Quality due to Accidental Release of Graywater, Deck Drainage, and other Regulated Discharges That do Not Meet Water Quality Standards

MM HAZ-1c. **Material Safety Data Sheets.** Maintain Material Safety Data Sheets (MSDS) for all hazardous materials stored onboard.

MM HAZ-2b. **Storage of Hazardous Materials** applies here.

MM WAT-9a. **Systems Inspections.** The sewage treatment and oil-water separator systems shall be inspected by a qualified engineer annually to ensure it is functioning properly. Additionally, as part of normal operations, if oily residue or foam appears on the sea surface around the FSRU, the systems shall be inspected to determine whether they are the source. Records of inspections shall be kept by the Applicant.

This impact would be reduced to less than significant with the implementation of this mitigation along with the Applicant proposed measures identified under Impact WAT-8.

4.18.4.4 Onshore - Operations

Impact WAT-10: Temporary Degradation of Surface Water Quality During Maintenance Activities

Releases of petroleum or other contaminants during maintenance activities could temporarily degrade surface water quality (Class III).

Regular maintenance of the pipelines could release petroleum or other contaminants or cause sedimentation of creeks from the use of maintenance vehicles or equipment. Maintenance monitoring of the pipeline, except at block valves and meter stations, would normally be conducted by pigs (inside the pipeline) and therefore would not have any impacts on water quality. Excavation and replacement of the pipe section would occur only if corrosion or wall thinning, which could result in the defined impact, were discovered. If so, small spills of petroleum products or other contaminants could enter surface water.

The Applicant has incorporated the following into the Project:

AMM WAT-10a. **Best Management Practices (BMPs) at Creek Crossings.** Best management practices such as using silt fencing and hay bales would be employed at all creek crossings for major maintenance activities that could result in spills that could enter surface water pathways.

AMM WAT-10b. **Spill Response Plan.** The Applicant would prepare a Spill Response Plan to protect surface water at and near the surface water crossings. This Plan shall be submitted and approved by the Los Angeles RWQCB at least 60 days before the construction of the onshore pipelines. The Plan shall identify specific measures to prevent, contain, and clean up any spills that could enter surface water pathways.

Mitigation Measure(s) for Impact WAT-10: Temporary degradation of surface water quality due to release of petroleum or other contaminants during maintenance activities.

Additional mitigation measures are not necessary. This impact is less than significant.

Impact WAT-11: Short-Term Degradation of Surface Water Quality due to Erosion caused by Regular Maintenance Activities

Regular maintenance of the pipelines could cause erosion and sedimentation of creeks from the use of maintenance vehicles or equipment, leading to short-term violations of water quality standards (Class III).

Maintenance of the right-of-way (ROW) may include trimming vegetation and visual inspection by vehicle. These activities would be routine but infrequent. The minor increase in vehicle and foot traffic would be negligible and accelerated erosion or sedimentation is not anticipated.

Mitigation Measure(s) for Impact WAT-11: Short-Term Degradation of Surface Water Quality due to Erosion caused by Regular Maintenance Activities

Incorporation of AMM WAT-10a AMM WAT-10b reduce this impact to less than significant.

4.18.5 Alternatives

4.18.5.1 No-Action Alternative

Under this alternative, the impacts described in this section would not occur.

4.18.5.2 Alternative DWP Location - Santa Barbara Channel/Mandalay Shore Crossing/Gonzales Road Pipeline

The offshore part of this alternative would include components identical to those of the proposed Project; therefore, impacts during construction and operation would be similar to those of the proposed Project. The impact classes for this Alternative would be the same as those for the proposed Project.

4.18.5.3 Alternative Onshore Pipeline Routes

Center Road Pipeline Alternative 1

Table 4.18-2 identifies surface water that would be parallel to or crossed by the Center Road Pipeline route and the Alternatives. Center Road Pipeline Alternative 1 would incur environmental issues similar to those of the proposed Project route, and impact classes for this Alternative would be the same as those for the proposed Project.

Center Road Pipeline Alternative 2

Center Road Pipeline Alternative 2 would incur environmental issues similar to those of the proposed Project route, and impact classes for this Alternative would be the same as those for the proposed Project.

Line 225 Pipeline Loop Alternative

The Line 225 Pipeline Loop Alternative would incur environmental issues similar to those of the proposed Line 225 Pipeline Loop route, and impact classes for this Alternative would be the same as those for the proposed Project. As identified in Table 4.18-3, this alternative would cross the South Fork Santa Clara River at MP 3.7 and the Santa Clara River at MP 5.7.

The USFWS and the CDFG indicated that trenching across the Santa Clarita River would not be acceptable. Therefore, the Applicant's options to install the pipeline beneath the river include the use of an existing pipeline bridge or HDD. If feasible, the pipeline bridge would result in the fewest impacts on water quality. Impacts from HDD would be similar to those of the proposed Project and are addressed in **MM WAT-6a-d**.

4.18.5.4 Alternative Shore Crossing/Pipeline Route

Point Mugu Shore Crossing/Casper Road Pipeline

The Point Mugu Alternative would incur environmental issues similar to those of the proposed route, and impact classes for this Alternative would be the same as those for the proposed Project. Table 4.18-2 identifies surface water bodies along the Center Road Pipeline route and alternatives. Minor waterbodies and agricultural drainages along the pipeline route would be crossed using trenching or spanning techniques, as described for the proposed Project. A canal parallel to the shoreline and within the Ventura County Naval Base (VCNB) would be crossed by the onshore HDD. HDD would be employed to install the pipeline across the beach, which would reduce or eliminate impacts from cutting, clearing, and/or removal of vegetation.

Impacts would be similar to those of the Arnold Road shore crossing because the shore crossing would cross essentially the same area. However, the proposed metering station would be located in an agricultural field at the southern end of Casper Road. In addition, the total length of the HDD would be longer than the Arnold Road shore crossing, which would create additional potential for an impact on freshwater/brackish wetlands, beaches and dunes, and non-tidal salt marshes if a release of drilling muds were to occur.

Arnold Road Shore Crossing/Arnold Road Pipeline

The Arnold Road Alternative would incur environmental issues similar to those of the proposed route and impact classes for this Alternative would be the same as those for the proposed Project. Minor water bodies and agricultural drainages along the pipeline route would be crossed using trenching or spanning techniques, as described for the

proposed Project. A canal parallel to the shoreline and within the VCNB would be crossed by trenching. HDD would be employed to install the pipeline across the beach, which would reduce or eliminate impacts from cutting, clearing, and/or removal of vegetation.

4.18.6 References

BHPB NPDES Permit Application, January 2004. Submitted to USEPA by Steve Meheen.

Entrix. August 2004a. Draft BHP Billiton LNG International Inc., Cabrillo Port Project Wetland Delineation.

Entrix, Inc. August 2003. Environmental Analysis, Cabrillo Port Deepwater Port in the Vicinity of Ventura, California.

Entrix, Inc. May 2004. Environmental Analysis, Onshore Component of BHP Billiton LNG International, Inc. Cabrillo Port Project.

LA Times.com. September 11, 2004. Oxnard Plant, Called a Top Area Polluter, Plans to Shut Down. By Fred Alvarez, Times Staff Writer

Los Angeles Regional Water Quality Control Board. 303(d) List. http://www.swrcb.ca.gov/rwqcb4/html/water_qty/303dList.html. Accessed June 30, 2004.

Los Angeles Regional Water Quality Control Board. Basin Plan/Beneficial Uses http://www.swrcb.ca.gov/rwqcb4/html/meetings/tmdl/Basin_plan/basin_plan.html. . Accessed June 30, 2004.

Regional Water Quality Control Board (RWQCB) – Central Coast Region. 1994. Water Quality Control Plan (Basin Plan) Central Coast Region. Available at: http://www.swrcb.ca.gov/rwqcb3/BasinPlan/Index.

Schiff, Kenneth C. and Richard W. Gossett. January 1998. Southern California Bight 1994 Pilot Project: III. Sediment Chemistry. Southern California Coastal Water Research Project.

State Water Resources Control Board. 2002. Resolution No. 2003-0009. Approval of the 2002 Federal Clean Water Act Section 303(d) List of Water Quality Limited.

Welday, E.E. and J.W. Williams. 1975. Offshore surficial geologic map of California, map sheet 26. California Division of Mines and Geology.